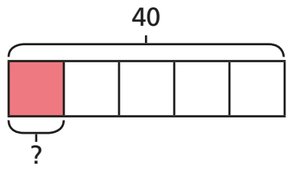
Find a fraction of a given amount

1 **a)** How does the bar model represent the calculation?

$\frac{1}{5}$ of 40

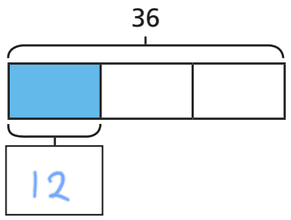


b) Complete the calculation.

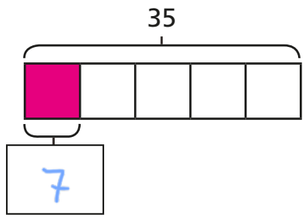
$\frac{1}{5}$ of 40 = 8

2 Use the bar models to help you complete the calculations.

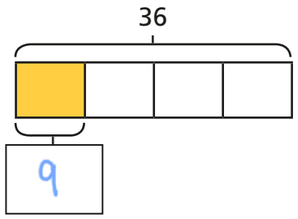
a) $\frac{1}{3}$ of 36 = 12



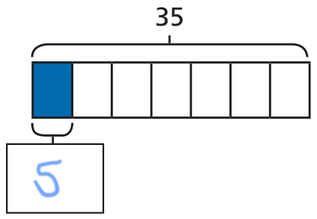
c) $\frac{1}{5}$ of 35 = 7



b) $\frac{1}{4}$ of 36 = 9

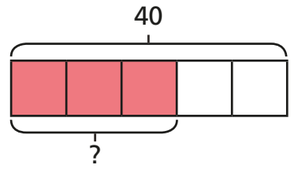


d) $\frac{1}{7}$ of 35 = 5



3 **a)** How does the bar model represent the calculation?

$\frac{3}{5}$ of 40

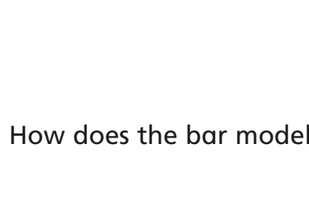


b) Complete the calculation.

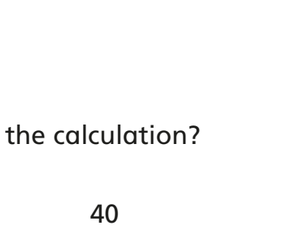
$\frac{3}{5}$ of 40 = 24

4 Use the bar models to help you complete the calculations.

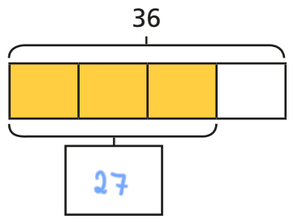
a) $\frac{2}{3}$ of 36 = 24



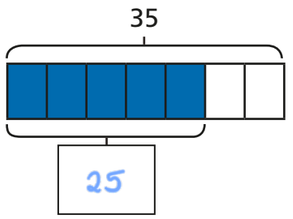
c) $\frac{2}{5}$ of 35 = 14



b) $\frac{3}{4}$ of 36 = 27



d) $\frac{5}{7}$ of 35 = 25



5 Complete the calculations.

a) $\frac{1}{5}$ of 630 lb = 126 lb

b) $\frac{2}{5}$ of 1,260 g = 504 g

c) $\frac{5}{8}$ of 760 m = 475 m

d) $\frac{7}{9}$ of 8.1 km = 6·3km

e) $\frac{11}{9}$ of 8.1 km = 9·9km

6 Nijah has 45 stickers.

She gives $\frac{2}{5}$ to her sister.

She gives $\frac{1}{3}$ of her remaining stickers to Brett.

How many stickers does Nijah have left?

18

7 Whitney has a box of milk and dark chocolates.

$\frac{6}{11}$ of the chocolates are milk chocolate.

There are 15 dark chocolates in the box.

a) How many milk chocolates are in the box?

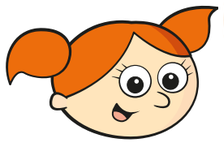
18

b) If Whitney eats 3 milk chocolates, what fraction of the chocolates left are dark chocolate?

$\frac{1}{2}$

8 A box usually contains 500 g of cereal.

The manufacturers increase the amount of cereal in the box by $\frac{1}{5}$



Alex

To get back to the original 500 g, I would now need to eat $\frac{1}{5}$ of the cereal in the box.

Alex is incorrect – she would need to eat less than $\frac{1}{5}$ of the cereal to only have 500 g in the box.

Mo

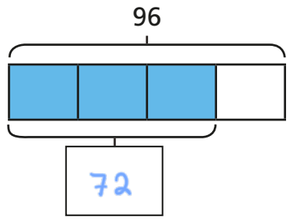
Who is correct? Mo

Explain your answer to a partner.

Use a given fraction to find the whole and/or other fractions

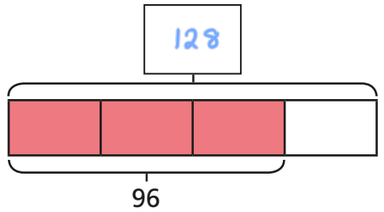
1 Complete the calculations.

a)



$\frac{3}{4}$ of 96 = 72

b)

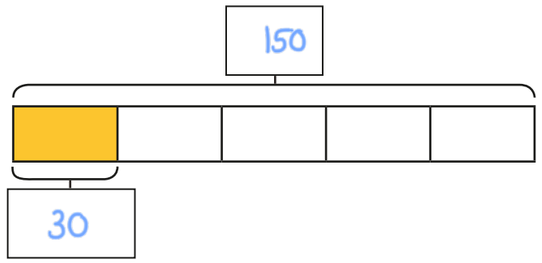


$\frac{3}{4}$ of 128 = 96

c) What is the same? What is different?

2 $\frac{1}{5}$ of a number is 30

a) Complete the bar model to represent this statement.



b) What is $\frac{2}{5}$ of the number? 60

c) What is $\frac{3}{5}$ of the number? 90

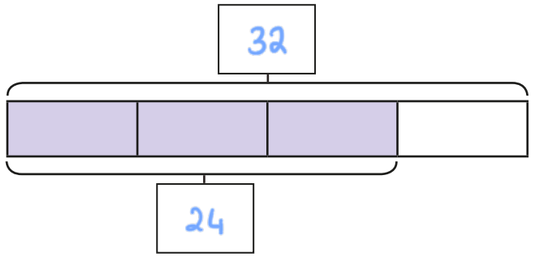
d) What is $\frac{5}{5}$ of the number? 150

e) Complete the calculation.

$\frac{1}{5}$ of 150 = 30

3 $\frac{3}{4}$ of a number is 24

Complete the bar model to represent this statement.



Complete the calculation.

$\frac{3}{4}$ of 32 = 24

4 Complete the sentences.

a) $\frac{1}{4}$ of a number is 8. The value of the whole number is 32

b) $\frac{3}{4}$ of a number is 12. The value of the whole number is 16

c) $\frac{2}{7}$ of a number is 56. The value of the whole number is 196

5 Kim scores $\frac{4}{5}$ of the marks on a test.

Her teacher says, "You only needed 6 more marks to get full marks on the test."

What was the total number of marks available?

30

6 Fill in the missing numbers to make each statement correct.

a) $\frac{2}{3}$ of [27] = $\frac{3}{4}$ of 24

b) $\frac{5}{7}$ of 560 = $\frac{4}{5}$ of [500]

c) $\frac{[6]}{6}$ of 54 = 54

d) $\frac{5}{8}$ of [120] = $\frac{3}{5}$ of [125] e.g

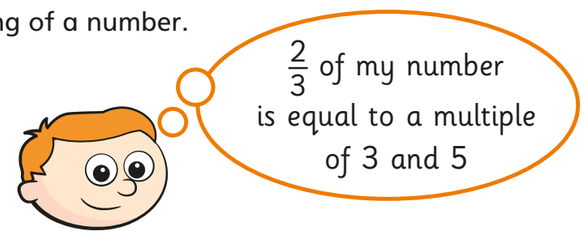
Can you find more than one possible answer for part d)?

7 Find the input of this function machine.

input			output
891	→	$\frac{4}{9}$ of the number	→ 396

The input is [891]

8 Ron is thinking of a number.



What number could Ron be thinking of?

e.g. [45]

Can you find more than one possible answer?

9 Esther has some money.

She saves £7.50 and then spends $\frac{3}{5}$ of what is left.

She now has £21

How much money did Esther have to start with?

[£42.50]

10 $\frac{5}{12}$ of an expression is $60y$.

What is the expression?

[144y]

11 Filip has written a linear sequence.

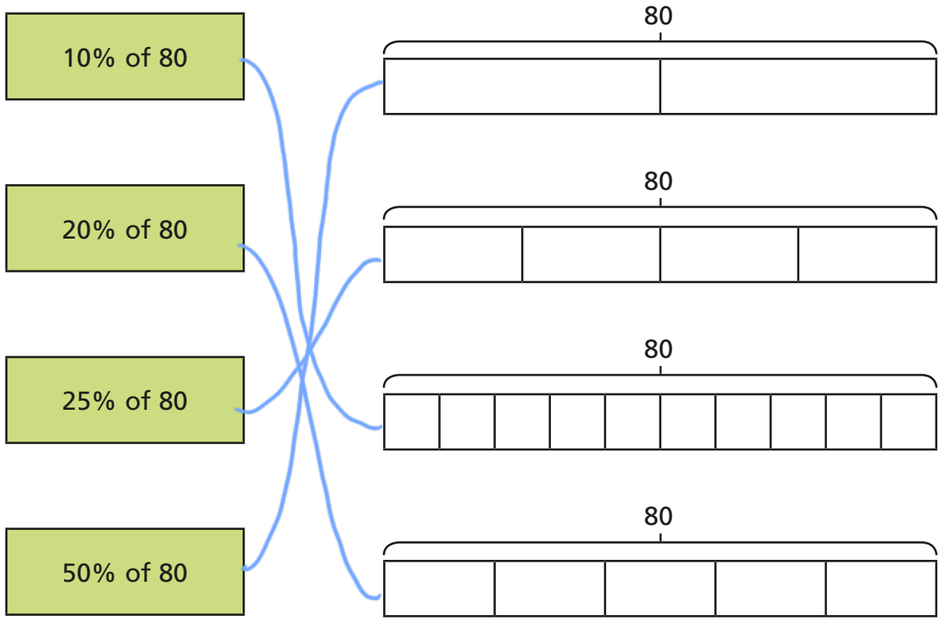
He says that $\frac{5}{6}$ of the 2nd term in the sequence is 20, and that half of the 4th term is 17

Find the first four terms in the sequence.

[19], [24], [29], [34]

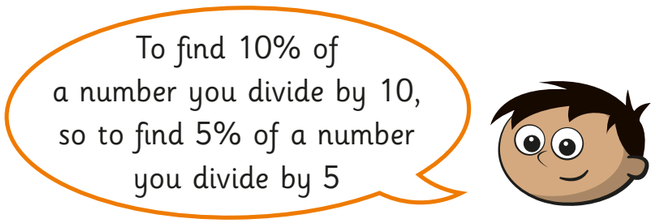
Find a percentage of a given amount using mental methods

1 Match the percentage calculations to the bar models.



Explain how the models can help with each question.

2



Is Amir correct? NO

Explain your reasoning.

5% = $\frac{5}{100}$ = $\frac{1}{20}$ so you divide by 20 to find 5%

3 Complete the calculations.

50% of £150 = £75

20% of £150 = £30

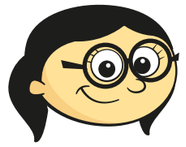
25% of £150 = £37·50

10% of £150 = £15

75% of £150 = £112·50

5% of £150 = £7·50

4



How many other ways could you find 75% of a number?

5 Use the calculations on the right to help you work out the calculations on the left.

a) 3% of 1,020 = 30·6 — 1% of 1,020 = 10.2

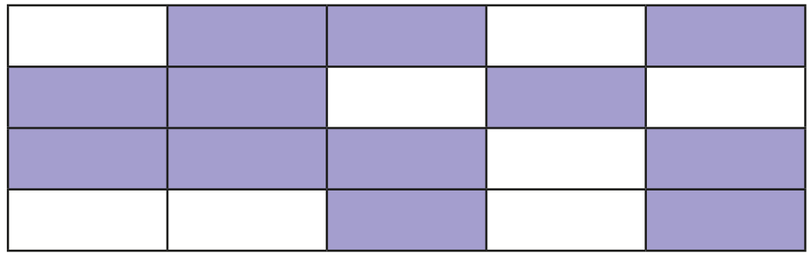
b) 3% of 781 = 23·43 — 6% of 781 = 46.86

c) 70% of 4,320 = 3,024 — 7% of 4,320 = 302.4

d) 95% of 120 = 114 — 5% of 120 = 6

e) 99% of 800 = 792 — 1% of 800 = 8

6 A rectangle is divided into identical smaller rectangles.



a) How many more rectangles need to be shaded so that 75% of the shape is shaded? 3

b) How many shaded rectangles need to be unshaded so that 50% of the shape is shaded? 2

c) How many more rectangles need to be shaded so that 5% of the shape is not shaded? 7

7 Ms Hall has £700 in her bank account.

She spends 45% of her money on rent.

How much money does she have left?

Ms Hall has £385 left.

8 Find the missing values.

25 % of 60 = 15

50 % of 30 = 15

12·5 % of 120 = 15

9 **a)** Work out 95% of 800

760

b) What method did you use?

Could you have used a different method?

10 Find the missing numbers in these calculations.

a) 30% of 100 = $\frac{1}{3}$ of 90

b) 35% of 200 = 70% of 100

c) 40% of 120 = 20% of 240

d) $\frac{1}{5}$ of 144 = 80% of 36

11 Find the values of the shapes.

30% of △ = ⬠

10% of ⬠ = ▭

50% of ▭ = 0.75

△ = 50 ⬠ = 15 ▭ = 1·5

Find a percentage of a given amount using a calculator

1 Complete the calculations.

Show your working.

a) 36% of £240 = £86·40

b) 79% of £56 = £44·24

2 Tick the calculation that cannot be used to find 83% of £542

542 ÷ 100 × 83	83 × 542 ÷ 100
542 ÷ 83 × 100 ✓	0.83 × 542

Explain your answer.

% means per 100 so you need to divide by 100 not multiply.

3 Write <, > or = to make the statement correct.

84% of 50 (=) 50% of 84

Explain your answer.

They're both equal to 42

4 In 2011, the population of Leeds was 474,632

The population of Leeds has now increased.

A web page states, "The population of Leeds has increased by 17%."

Is it possible for the population to have increased by **exactly** 17%?

Explain your answer.

No, 17% of 474,632 = 80,687·44 and you can't have 0·44 of a person.

5 Calculate 37% of 2 m.

Give your answer in centimetres.

74 cm

6 Dani is buying a bike.

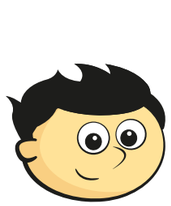
She finds the same bike in two different shops.

The rate of VAT is 20%.

In which shop would it be cheaper to buy the bike? Show your working.

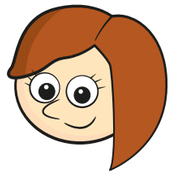
Fast Bikes

7 Rosie and Jack are calculating 99% of £250



Jack: You need to use a calculator for this as they are large numbers.

Rosie: I think it's possible to use a mental method for this.

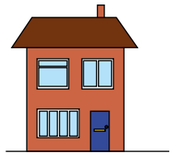


Which mental method might Rosie use?

8 In 2007, the value of a house was £119,995

From 2007 to 2018, house prices decreased by 9.4%.

How much has the value of the house decreased by?



£11,279.53

9 A car salesman earns commission for each car he sells.

The commission is a percentage of his monthly salary, based on the values of the cars he sells.

Here is a table of his commissions.

Car value	Commission
< £15,000	2.3% of salary
≥ £15,000	5.7% of salary

His monthly base salary is £1,208

a) How much commission does he earn from selling 1 car for less than £15,000?

£27.78

b) How much commission does he earn for selling 6 cars, each for less than £15,000?

£166.70

c) How much commission does he earn for selling 7 cars, each for more than £15,000?

£481.99

d) In January, he sells 6 cars that cost less than £15,000 and 7 cars that cost more than £15,000

How much does he get paid that month?

He gets paid £1856.69

10 Mr Jones wants to put £850 into a bank account.

He looks at the interest rates from two different banks.

Bank Central

First year:
3% of the original amount deposited

Second year:
1.5% of the total amount at the end of year 1

Bank Happy

First year:
0.5% of the original amount deposited

Second year:
4% of the total amount at the end of year 1

At the end of 2 years he wants to have made as much money as possible.

Which bank should Mr Jones use? Bank Central

Explain your answer.

Bank central: £888.63

Bank Happy: £888.42